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10/682,096	10/08/2003	Edward G. Sergoyan	81013/7400	9217

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EXAMINER	
ROGERS, DAVID A	
ART UNIT	**PAPER NUMBER**
2856	

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Please find below and/or attached an Office communication concerning this application or proceeding.

H-A

Office Action Summary	**Application No.** 10/682,096	**Applicant(s)** SERGOYAN, EDWARD G.
	Examiner David A. Rogers	**Art Unit** 2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 January 2005*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *05 January 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 1 is objected to because of the following informalities. Claim 1 recites filtering for to a first wavelength then to a second wavelength. However, it appears there is an intermediate step missing in the claimed method. This step should include a process for inspecting for leaks and, when no leak is found, shifting the second filter into alignment. Furthermore, the claim should recite a limitation wherein the second filter is used with or without the first filter. Appropriate correction is required.

2. Claim 4 is objected to because of the following informality. Claim 4 recites having light emitted at a third wavelength. However, there is no active, positive step of creating the third wavelength, e.g. shifting a third filter into alignment. Similarly, if a third filter is used then it too should recite that it is in alignment with any, all or none of the previous filters. Appropriate correction is required.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 12, 14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 5,905,268 to Garcia *et al.* in view of United States Patent Application Publication 2003/0187344 to Nilson *et al.*, United States Patent 6,491,408 to Cooper *et al.*, and United States Patent 5,959,306 to Kalley *et al.*

Garcia *et al.* teaches assembly (reference item 10) for fluorescing materials for inspecting regions for leaks. The light source comprises a bulb (reference item 18), a filter holder (reference item 34), and a filter (reference item 36). Garcia *et al.* teaches that the inspection light source "permits the easy substitution of customized filters for differing applications." See column 2, lines 7-10. Garcia *et al.* also teaches

> "Leak detection, materials detection, and qualitative non-destructive testing are well suited to techniques employing fluorescence detection. These techniques rely upon the unique physical property of various materials to fluoresce when excited by certain wavelengths of visible or ultraviolet ("UV") light." See column 1, lines 10-15.

and

> "There are numerous applications for an inspection lamp of the present invention. Several commercially available dyes used in leak detection applications fluoresce after being excited by ultraviolet and visible blue wavelengths. As noted above, the fluorescent response of these dyes can be maximized by selective filtering of the light transmission used to excite the dye molecules. The resulting light transmission would be much more intense and the total amount of light energy available to fluoresce a material is significantly greater, thus increasing the probability that a dye molecule will fluoresce and be observed, and a weakness in a pipe or conduit detected.
>
> Because many materials are known to naturally fluoresce, a hand-held inspection lamp may be used for materials detection. Certain types of fungus or minerals are examples of materials whose detection would be much more efficiently achieved with an inspection lamp that can transmit specific wavelengths of electromagnetic radiation characteristic to those materials. Customized dichroic filters used in the inspection lamp of the present invention make this possible." See column 4, lines 47-67.

It is clear from Garcia *et al.* that different materials have different fluorescent wavelengths. See also Cooper *et al.*, column 1, lines 37-46 where it is taught that commonly used fluorescent dyes also have different fluorescent wavelengths.

A normal user of the device of Garcia *et al.* would be provided with a plurality of filters, each filter operable to produce a specific wavelength of radiation. This might prove to be cumbersome since filters could be lost or damaged if dropped. Furthermore, the user would have to remove and replace the filter holder each time the filter needed to be changed.

Nilson *et al.* teaches an assembly for fluorescing materials. The apparatus comprises a light source (reference item 37) and a filter wheel assembly (reference item 47). Nilson *et al.* further teaches

> "Typically, the usable fluorescence spectrum is in the range of 400 nm to about 900 nm. Thus, depending upon the desired fluorescence spectra, the composition of the sample material and the fluorescent material, the remaining light emitted by the light source must be filtered out. Optical filters are applied, accordingly, to filter out non-fluorescence spectra as well as unwanted fluorescence spectra. Depending upon the application, there have been selected optical filters or filter wheels disposed in the imaging compartment of an imaging apparatus 21 just after the off-set light source. Such an arrangement, however, would not be practical in the lighting technique of the present invention since the diameter of the ring-shaped frame 32 is significantly larger. Moreover, proportionate to the size of the imaging compartment, a filter wheel could not be deployed.
>
> "In accordance with the present invention, a filter wheel assembly, generally designated 47, is positioned "in-line" in the fiber optic bundle 35 (FIGS. 1, 4 and 6). Preferably, the filter wheel assembly 47, which includes a plurality of optical filters, is positioned in close proximity to the transmission box. This enables the filter wheel assembly and the transmission box to be supported on a common support frame 48, and to be packaged together as a single unit." See page 4, §0056-§0057.

and

> "The optical filters are typically interference-type filters which include bandpass filters, longpass filters and shortpass filters. These filters are preferably provided as a filter set contained on a filter wheel 55 of the filter wheel assembly 47 which is placed in-line with the fiber optic bundle 35. Thus, the filter wheel 55, rotatably mounted in a recess 56 of the housing 57, can be selectively rotated to position the selected filter in the path of the fiber optic strands.

> Each interference filter is selected to allow the passage of select spectra of light. Another useful parameter, in accordance with the present invention, is selecting a filter with sharp cut-offs or edges so that the gap between the excitation and emission filter bands can be minimized. This is beneficial in that the Stokes shift for many common fluorescent dyes and proteins is relatively small. The Stokes shift is the separation in wavelength between the excitation and emission peak. Usually, a filter gap of about 20 nm is chosen. These filters also are characterized by very high rejection outside the passband or "out-of-band" blocking properties, with a typical rejection of >10.sup.6. Furthermore, the filters are also preferably constructed from low auto-fluorescent materials. Accordingly, the application of these higher quality excitation and emission filters allows the use of a single excitation-emission filter pair without an associated dichroic filter." See page 5, §0059-§0060.

Clearly it is known from Nilson *et al.* to provide means to alter the wavelength of the radiation depending on the materials to be inspected. Modifying the apparatus of Garcia *et al.* to comprise means to allow the plurality of filters to be moved into the path of the source of radiation would allow plurality of filters to be easily and quickly available to the user.

As noted in the previous office action Kalley *et al.* discloses a light source (see figures 1, 2, 5, and 6) for illuminating areas of possible leakage. Kalley *et al.* also discloses a detection filter (see figures 3 and 4) for use in detecting light at a second wavelength from the region of possible leakage. This detection filter is used so that "light emitted from the substance can be enhanced" when viewed. See column 7, lines 33-35.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Garcia *et al.* with the teachings of Nilson *et al.*, Cooper *et al.*, and Kalley *et al.* to provide a light fluorescing apparatus comprising a plurality of filters that can be moved into the path of radiation.

5. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Garcia *et al.* in view of Nilson *et al.*, Cooper *et al.*, and Kalley *et al.* as applied to claim 12 above, and further in view of United States Patent 6,220,719 to Vetorino *et al.*

Garcia *et al.* in view of Nilson *et al.*, Cooper *et al.*, and Kalley *et al.* teaches a light fluorescing apparatus comprising filters. Garcia *et al.* in view of Nilson *et al.*, Cooper *et al.*, and Kalley *et al.* does not expressly teach a light fluorescing apparatus comprising a gasket to prevent ignition of fumes.

Vetorino *et al.* teaches light emitting apparatus comprising a housing (reference item 10), first and second gaskets (reference item 38), a retainer (reference item 44), and a third seal (reference item 42). Vetorino *et al.* teaches that this configuration provides a light apparatus that is watertight and explosion proof. See column 3, lines 5-15. This sealing arrangement, i.e., using gaskets (reference item 38) and retainer (reference item 44) on the device of Garcia *et al.* would allow the filter taught by Garcia *et al.* to still be removed and replaced.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Garcia *et al.* in view of Nilson *et al.*, Cooper *et al.*, and Kalley *et al.* with the teachings of Vetorino *et al.* to provide a gasket on a light fluorescing apparatus to prevent possible explosions when used in a dangerous environment.

6. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Garcia *et al.* in view of United States Patent 4,383,735 to Stravitz, Cooper *et al.*, and Kalley *et al.*

Garcia *et al.* teaches assembly (reference item 10) for fluorescing materials for inspecting regions for leaks. The light source comprises a bulb (reference item 18), a filter holder (reference item 34), and a filter (reference item 36). Garcia *et al.* teaches that the inspection light source "permits the easy substitution of customized filters for differing applications." See column 2, lines 7-10. A normal user of the device of Garcia *et al.* would be provided with a plurality of filters, each filter operable to produce a specific wavelength of radiation. This might prove to be cumbersome since filters could be lost or damaged if dropped. Furthermore, the user would have to remove and replace the filter holder each time the filter needed to be changed. It is clear from Garcia *et al.* that different materials have different fluorescent wavelengths. See also Cooper *et al.*, column 1, lines 37-46 where it is also taught that commonly used fluorescent dyes also have different fluorescent wavelengths.

Stravitz teaches a filtering housing. This housing (reference items 20 and 30) contains a plurality of individual filters. After mounting the user can move any combination of filters into position to filter light. Stravitz teaches that this allows the filters to be selectively applied. In particular, Stravitz teaches:

> "The object of the present invention is to provide an improved combination filter pack and filter holder for holding and storing a plurality of filters in a protected condition, the

> filters being easily moved from a protected storage location to an operative location, without requiring handling of the filters, per se. Another object is to provide such a combination in a single package which may be readily handled, readily installed on a camera, which is compact to use and store, and which provides protection for the filters when they are in their operative position on a camera, as well as when in their storage position.
>
> A further object of the invention is to provide such a combination filter pack and filter holder which may be pre-loaded with a plurality of filters prior to use, the filters then being selectively movable from a storage to an operative position, in any combination, and in a simple and expedient manner." See column 1, lines 31-48.

Not only is this beneficial for the fluorescing assembly of Garcia *et al.* (the ability to carry and individually select from the plurality of filters), but this device would also be helpful in recording the results of the leak testing. That is the device of Stravitz would allow the selection of one or more filters so that the reflected radiation to be maximized (see Kalley *et al.* above for this teaching).

Finally, as noted above Kalley *et al.* discloses a light source (see figures 1, 2, 5, and 6) for illuminating areas of possible leakage. Kalley *et al.* also discloses a detection filter (see figures 3 and 4) for use in detecting light at a second wavelength from the region of possible leakage. This detection filter is used so that "light emitted from the substance can be enhanced" when viewed. See column 7, lines 33-35.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Garcia *et al.* with the teachings of Stravitx, Cooper *et al.*, and Kalley *et al.* to provide an apparatus for selectively filtering light for leakage testing.

7. Claims 1, 2, and 4-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent 6,539,776 to Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.*

Davey teaches a method for testing a small portion of a sealed region for leaks. In particular Davey teaches the placement of a pad (reference item 20) over a small region of a structure and changing the pressure on that side of the structure. Leaks are indicated by a change in differential pressure. However, once the pad is removed there is no indication as to which particular area was leaking. That is, in figure 1 of Davey there is no record of which section (reference item 12a or 12b) was leaky.

Duerr teaches that it is known to perform leak testing on sealed regions on a vehicle or other sealed structure, e.g., slate roofs, mobile homes, or any other body intended to keep out environmental elements. Specific regions of testing include the region where the windshield and the frame are joined. In particular, Duerr teaches a method for locating leaks by utilizing a nozzle for spraying a fluorescent dye-based solution on a first surface, and locating the leaks on a second surface. The spraying of the fluorescent dye-based solution is taught as simulating actual operating condition of the vehicle, specifically high speed travel under storm-like conditions.

The application of a dye on the opposite surface of the structure, as taught by Duerr, would allow the user to be able to get a clear, marked indication on the exterior of the structure where leaks are present. Being fluorescent one can easily use the light source, as disclosed by Duerr, to view the specific portion of the structure in order to determine the exact location of the leak. Furthermore, being a water-based liquids (typically), the fluorescent dye-based solution will show the full extent of the leak, even after the water has evaporated.

Garcia *et al.* teaches assembly (reference item 10) for fluorescing materials for inspecting regions for leaks. The light source comprises a bulb (reference item 18), a filter holder (reference item 34), and a filter (reference item 36). Garcia *et al.* also teaches that the inspection light source "permits the easy substitution of customized filters for differing applications." See column 2, lines 7-10. Furthermore, Nilson *et al.* teaches an assembly for fluorescing materials. The apparatus comprises a light source (reference item 37) and a filter wheel assembly (reference item 47) for sequentially moving filters into alignment with the radiation path.

As noted above different materials have different fluorescent properties. One would have been motivated by the teachings of Garcia *et al.* and/or Nilson *et al.* to provide a plurality of filters for the light emitting apparatus so that the appropriate filter is easily and quickly available for the specific fluid used in the leak testing process.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Davey with the teachings of Duerr, Garcia *et al.*, and Nilson *et al.* to provide a leak testing method using fluorescent dyes and filters.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* as applied to claim 1 above, and further in view of Kalley *et al.*

Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* teaches a method for inspecting aircraft for leaks using fluorescent dyes, radiation, and filters. Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* does not teach a method using a filter with the reflected light.

As noted above Kalley *et al.* discloses a light source (see figures 1, 2, 5, and 6) for illuminating areas of possible leakage. Kalley *et al.* also discloses a detection filter (see figures 3 and 4) for use in detecting light at a second wavelength from the region of possible leakage. This detection filter is used so that "light emitted from the substance can be enhanced" when viewed. See column 7, lines 33-35.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* with the teachings of Kalley *et al.* to provide a method of inspecting for leaks using a filter on the reflected radiation.

9. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* as applied to claim 1 above, and further in view of Stravitz.

Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* teaches a method for inspecting aircraft for leaks using fluorescent dyes, radiation, and filters. Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* does not teach a method using a plurality of filters in simultaneous alignment with the path of radiation.

Stravitz teaches a filtering housing. This housing (reference items 20 and 30) contains a plurality of individual filters. After mounting the user can move any combination of filters into position to filter light. Stravitz teaches that this allows the filters to be selectively applied. In particular, Stravitz teaches:

> "The object of the present invention is to provide an improved combination filter pack and filter holder for holding and storing a plurality of filters in a protected condition, the filters being easily moved from a protected storage location to an operative location, without requiring handling of the filters, per se. Another object is to provide such a combination in a single package which may be readily handled, readily installed on a camera, which is compact to use and store, and which provides protection for the filters when they are in their operative position on a camera, as well as when in their storage position.
>
> A further object of the invention is to provide such a combination filter pack and filter holder which may be pre-loaded with a plurality of filters prior to use, the filters then being selectively movable from a storage to an operative position, in any combination, and in a simple and expedient manner." See column 1, lines 31-48.

Not only is this beneficial for the fluorescing assembly of Garcia *et al.* (the ability to carry and individually select from the plurality of filters), but this device would also be helpful in recording the results of the leak testing. That is the device of Stravitz would allow the selection of one or more filters so that the reflected radiation to be maximized (see Kalley *et al.* above for this teaching).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the teachings of Davey in view of Duerr, Garcia *et al.*, and Nilson *et al.* with the teachings of Stravtiz to provide means for allowing one or more filters to filter the radiation so that the proper wavelength is selected for creating the maximum amount of fluorescing of any material (dyes) on the surface.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

> United States Patent 2,313,356 to New teaches a light assembly, as seen in figure 5, comprising a filter (reference item 26) that slides into the path of the emitted light.

11. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Rogers whose telephone number is (571) 272-2205. The examiner can normally be reached on Monday - Friday (0730 - 1600).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron E. Williams can be reached on (571) 272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

dar
17 March 2005

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